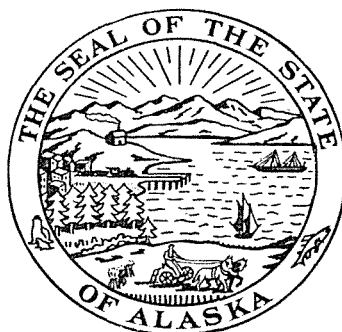


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STATE OF ALASKA

William A. Egan, Governor



ANNUAL REPORT OF PROGRESS, 1969 - 1970

FEDERAL AID IN FISH RESTORATION PROJECT F-9-2

SPORT FISH INVESTIGATIONS OF ALASKA

ALASKA DEPARTMENT OF FISH AND GAME

Wallace H. Noerenberg, Commissioner

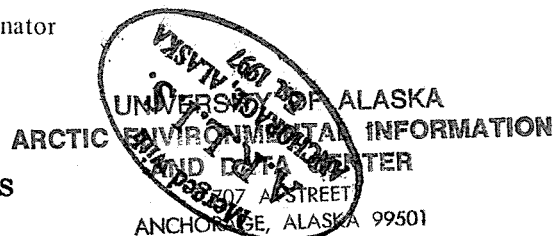
*Alaska* DIVISION OF SPORT FISH

Rupert E. Andrews, Director

Howard E. Metsker, Coordinator

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## INTRODUCTION

This report of progress consists of Job Segment Reports from the State of Alaska, Federal Aid In Fish Restoration, Project F-9-2, "Sport Fish Investigations of Alaska".

The studies reported herein are investigations evaluating the sport fish resources of the state. Recreational and other impacts on the fishery resources necessitates a continuous endeavor of ascertaining facts and knowledge of the fisheries. The 24 jobs reported on are of a continuing nature. The investigations are composed of 11 projects involved with the inventory and cataloging of the sport fish waters of the state, sport fishery creel censuses, and access. Fish species that received special investigational effort include: Dolly Varden, anadromous fish, grayling, sheefish, whitefish, pike, char, and salmon. The information gathered from the combined studies provides necessary background data for a better understanding of management problems and constitutes a basis for necessary future investigations.

The subject matter contained in these reports is incomplete, and the findings and interpretations subject to re-evaluation as work progresses.

## RESEARCH PROJECT SEGMENT

*State:* Alaska

*Project No.:* F-9-2                      *Name:* Sport Fish Investigations of Alaska.

*Job No.:* 12-D                      *Title:* Creel Census of the Sport Fisheries in the Bristol Bay Drainage.

*Period Covered:* July 1, 1969 to June 30, 1970.

## ABSTRACT

The voluntary creel census reports supplied by the Naknek River military recreational camps are discussed. These reports are inaccurate and are of value only in the absence of other available sources of information for those fisheries. Data on the fishery for king salmon, Oncorhynchus tshawytscha, is discussed.

A direct census has become necessary during the summer season to obtain catch and effort statistics for the Naknek River rainbow trout, Salmo gairdneri, sport fishery.

The Naknek River king salmon sport fishery reached a new high, with a total catch of 4,631 fish estimated by a stratified random sampling technique.

Kvichak River watershed fishing pressures are covered in a separate report (Job No. 12-B).

Observations in the Wood River-Tikchik and Ugashik lake systems were made incidental to other activities and are only indicative of general trends.

Angling activity in the study area has accelerated. New and existing lodges as well as guide services are enlarging their facilities and/or extending their seasonal activities.

## RECOMMENDATIONS

1. Continue tabulating the voluntary creel census data from military recreation camps on the Naknek River.
2. Continue direct random census by Sport Fish personnel on the Naknek River during the king salmon, Oncorhynchus tshawytscha, season and expand it to cover the entire river from May 15 to September 15. An additional aide is required to assist in carrying out this census.
3. Creel census activities in the Kvichak River watershed should be accomplished under Job No. 12-B.
4. Continue and extend sampling efforts into the Wood River lakes system.
5. Indications of fishing pressure trends received from contacts with guides, charter pilots, and lodge operators should receive increased attention. An overall picture of area-wide fishing effort may be possible by this method.

## OBJECTIVES

To determine the extent and impact of angling pressures on the sport fish resources in specific recreational areas.

To determine and provide recommendations for future investigations and management of the study area waters.

## TECHNIQUES USED

Frequent contacts were made with military recreational facility supervisory personnel on the Naknek River. Individual voluntary creel census sheets were received and the data tabulated. Total angler-use information from camp administrative records was also received at the end of seasonal operation.

A direct census employing a random sampling technique was conducted on the Naknek River by Sport Fish Division personnel during the king salmon sport fishery. Each day was divided into three, six-hour periods beginning at 6 AM. Fifteen random visits of one hour's duration were made during each weekly period at each of the three main boat docking areas: Rapids Camp, King Salmon Air Force Station Dock, and the public access area near the end of the airport cross-strip.

Creel census information was obtained directly during work periods to the Ugashik, Wood River, Tikchik, and Kvichak systems.

Guides, charter services, and lodge operators were contacted personally and by correspondence to obtain total fishing effort estimates.

## FINDINGS

### Naknek River Studies

#### Military Reports:

The significance of the voluntary creel census reports on the Naknek River has varied during the 14-year period in which Federal Aid projects have been concerned with sport fisheries. Prior to the assignment of a full-time fishery biologist in King Salmon, this data essentially constituted the entire source of information.

The total angling effort can be used to extrapolate an estimate of total catch of a given species. It cannot be done for each site and be considered reliable because of (1) the rapid shifts in availability of the several species through the season, (2) the fluctuations in the numbers of anglers present at the camps, (3) fluctuations in effort related to weather, and (4) the extremely wide variation in compliance with the requirement that the report form be completed.

Catch estimates of various species may be made by expanding the reported catch by the ratio of reporting anglers to total estimated angler-days.

The total number of angler-days has since been calculated as follows: At the Lake and Rapids camps, the number of visitors was multiplied by the estimated average number of days which each camp guest was reported to have spent on the river. Since there was no ascertainable change in the manner in which parties of guests were scheduled during the season, we continued to use four angler-days, as was done in past years. At the Base Dock, an accurate record is kept of all individual boat rental transactions. This figure is multiplied by the angler-per-boat average (2.16 anglers/boat for 1969) to yield total angler-days for this facility. Table 1 lists effort in angler-days from 1967-69.

**TABLE 1** Military Fishing Effort on the Naknek River as Indicated by Lake and Rapids Camps Utilization and Boat Rentals from the Base Dock, 1967-1969.

<u>Facility</u>	<u>Angler Days</u>		
	<u>1967</u>	<u>1968</u>	<u>1969</u>
Base Dock	1,293	1,495	1,140
Rapids Camp	2,916	2,252	2,672
Lake Camp	<u>3,951</u>	<u>3,096</u>	<u>1,740</u>
Total	8,160	6,843	5,552

The census of the king salmon fishing effort (see following section on king salmon) indicates a probable military catch of 4,473 kings (96.6% of the total catch). The catch by this segment of the fishery was estimated by the extrapolation method as shown in Table 2. The extrapolation method indicates 2,799 fish, or 83% of a minimum catch, could be expected from the military (95% confidence level). The military reporting system underestimates the probable catch levels. Extrapolating the estimated catch may be permissible under the assumption that the estimate derived is better than no estimate. Restricted use will continue to be made from military information with an awareness of its limitations.

**TABLE 2** Total Military Catch of King Salmon as Estimated from Voluntary Creel Census Reports, Naknek River, 1969.

	<u>Est. angler days</u>	<u>No. reporting anglers</u>	<u>Percent reporting</u>	<u>Kings reported</u>	<u>Est. catch</u>
Lake Camp	1,740	462	26.5	115	434
Rapids Camp	2,672	1,767	66.1	1,308	1,979
Base Dock	1,140	331	29.0	112	<u>386</u>
			Total		2,799

#### King Salmon:

A stratified random creel census program was carried out during the king salmon, *Oncorhynchus tshawytscha*, fishery which was extended due to the excellent return. Contrary to the plan followed during 1968, catches were checked at the landing points rather than while anglers were fishing. These checks were made at Rapids Camp, the Base Dock at King Salmon, and the public access area near the end of the King

Salmon airport cross-strip, locally referred to as the F.A.A. area. The day was divided into three, six-hour periods including those hours from 6 AM until midnight. While the schedule proved rather demanding upon the sampler, this year's estimate allowed calculation at the 95% confidence level, which marked a substantial improvement over the 1968 plan.

Estimated catches by area and week are listed in Table 3. Estimated total seasonal catch of 4,631 fish (confidence intervals at the 95% level are 3,497 and 5,765 fish) represents a substantial increase of 1967 and 1968 estimates of 1,579 and 2,203 fish, respectively. This increase in the annual sport catch is the result of three factors: (1) the large run of king salmon into the river this season, (2) an increase in total fishing pressure exerted by the fishery, and (3) a tendency of anglers to fish with salmon egg clusters as opposed to trolling with artificial lures.

TABLE 3 Estimate of Weekly Sport Catch of King Salmon, Naknek River, 1969.

<u>Location</u>	<u>June 8-14</u>	<u>June 15-21</u>	<u>June 23-28</u>	<u>June 29 -July 5</u>	<u>July* 6-13</u>	<u>Weighted Totals**</u>
Rapids Camp	***	160	735	790	1,119	2,794
Base Dock	70	126	361	380	642	1,581
Public	***	17	151	42	42	251
	—	—	—	—	—	—
Weighted Totals	70	303	1,247	1,212	1,803	4,631

\*Sampling periods for July 13 included in week number 5.

\*\*The weighted totals may not be the sum of the component parts due to the weighting factors.

\*\*\*Estimates for these cells were omitted due to a shortage of samples.

#### Rainbow Trout:

Fishing pressure on rainbow trout, Salmo gairdneri, in the Naknek River is exerted throughout the entire year. This fishery can be divided according to season, each season having individual characteristics.

The winter effort is limited primarily to an ice fishery. Fishing pressure is still relatively light.

A spring fishery commences in the upper river area in the vicinity of the Lake Camp as soon as open water is present. Rainbow trout taken at this time of the year include a number of mature fish moving into the river from Naknek Lake to spawn. This fishery continues from April 10 to the June 7 closure. Some effort is exerted outside of the closed area. Observations of this fishery do not allow an estimate of angler-days, but effort can be described as equal to, and possibly greater than, that reported for this period during 1968 (Paddock, 1969).

\* For a two-week period after the spawning closure, considerable effort is directed toward rainbow trout in the Lake Camp and Rapids areas. These rainbow trout are a portion of the post-spawning population which has not moved back into Naknek Lake. This effort is finally redirected entirely toward the king salmon fishery.

Rainbow trout taken during the latter part of June and the first half of July are incidental to the king and red salmon fisheries. Rainbow trout taken in this manner are not inconsequential, totaling 620 for this period. During August and the latter part of July, rainbow trout become the object of specific effort in the Rapids Camp area, and bag limits frequently contain fish in the 25 - 50 cm range.

As the Lake Camp area red salmon, O. nerka, fishery begins to fall off in August, attention is again turned to rainbow trout. The success obtained during 1969 was an improvement over the observed previous fall seasons. After the termination of the seasonal camp operation, success continued to be enjoyed by local anglers until freeze-up. The catch included a high proportion of mature trout.

No data is available on the rainbow trout fishery during the summer and fall periods except that contained in voluntary military reports. These were extrapolated for 1969, with the following results for their operating periods:

Lake Camp	1,418 rainbow trout
Rapids Camp	1,570 rainbow trout
Base Dock	<u>152</u> rainbow trout
Total	3,140 rainbow trout

Heavy demands, both specific and incidental, upon rainbow trout during most of the year require a thorough knowledge of the species catch magnitude and is necessary for efficient management. We do not presently possess adequate information relative to these effects on the fishery. An objective critique of either existing or proposed regulatory restrictions is impossible.

The sport fishery on this water has not attained a magnitude where usable catch parameters can be applied.

#### Other Species:

The Dolly Varden, Salvelinus malma, fishery increased during mid-April and May in the Rapids Camp and King Salmon Creek areas over the preceding season. Spot-check surveys were made during this six-week period. The King Salmon Creek area is popular with personnel from the local Air Force Base, due to its close proximity.

With a red salmon escapement of over 1,300,000 fish, an abundant supply of this species was available to anglers. Extrapolation from the military anglers voluntary census data shows a total estimated catch of 9,582.

Pink salmon, O. gorbuscha, were not present in quantity during 1969 due to the small, "odd-year" escapement.

#### Kvichak Watershed

General fishing pressure trends in this watershed, as reported by guides and lodges, are included in the

final section of this report. All direct creel census efforts by Sport Fish Division personnel are discussed in Job No. 12-B.

#### Ugashik Watershed

Observations were limited to two weeks during late July and early August at the Lower Ugashik outlet where fishing pressure continued to be "scattered" as described in the 1968 report. Direct observations of the Narrows fisheries for Arctic grayling, Thymallus arcticus, and Arctic char/Dolly Varden consisted of three aerial surveys, information received from guides, Protection Division personnel, and military recreation camp personnel. Indications are that the activity description for that locality given in the 1968 report continues to apply.

#### Wood River - Tikchik Lakes Area

Creel census in the Tikchik lakes area received only incidental attention during the 1969 season. Reports were obtained from the lodge located in the Tikchik Narrows. The number of angler-days increased two and one-half times over the previous year. In addition to the lodge site at the Narrows and Nuyakuk River, utilization was made of the Tikchik River and portions of the upper Nushagak River by float trips.

Activities in the Wood River lakes system were primarily for cataloging and inventory purposes. Creel census observations were general in nature. The periods of the survey work did not include the month of September which is reported to be when most of the fishing pressure is applied. The major effort is applied to the Agulowak and Agulukpak rivers.

Increasing sport fishing pressure accompanies a continuing expansion of facilities and services in the area. Two notable examples are the Wood River Wilderness Camp and the new Golden Horn Lodge on Lake Mikchik (4th Wood River lake). Additional facilities can be expected in the near future. In view of this increase in fishing pressures, the ability of the rainbow trout population to support the higher level of utilization should be evaluated.

Rainbow trout; Arctic char, Salvelinus alpinus; northern pike, Esox lucius; Arctic grayling; and red salmon are available in season.

#### Katmai National Monument

During the reporting period, the Monument boundaries were extended to completely encompass Naknek Lake and a portion of Naknek River. Since this addition includes the upper river area currently utilized by anglers, this year's National Park Service visitor statistics to the Monument are not comparable with prior seasons. Figures for overnight accommodations provided by Wien Consolidated Airlines' Brooks River camp afford a usable index to pressure in the area. Figure 1 depicts the annual number of overnight accommodations from this source for the ten-year period 1960-1969 (National Park Service figures). The camp operator estimates 75% of the guests at this facility participate in the sport fishery.

This data does not provide detailed information on size composition or species composition. While observations indicate that an acceptable level of success continues to be enjoyed, knowledge of fisheries is inadequate for regulatory considerations.

#### LITERATURE CITED



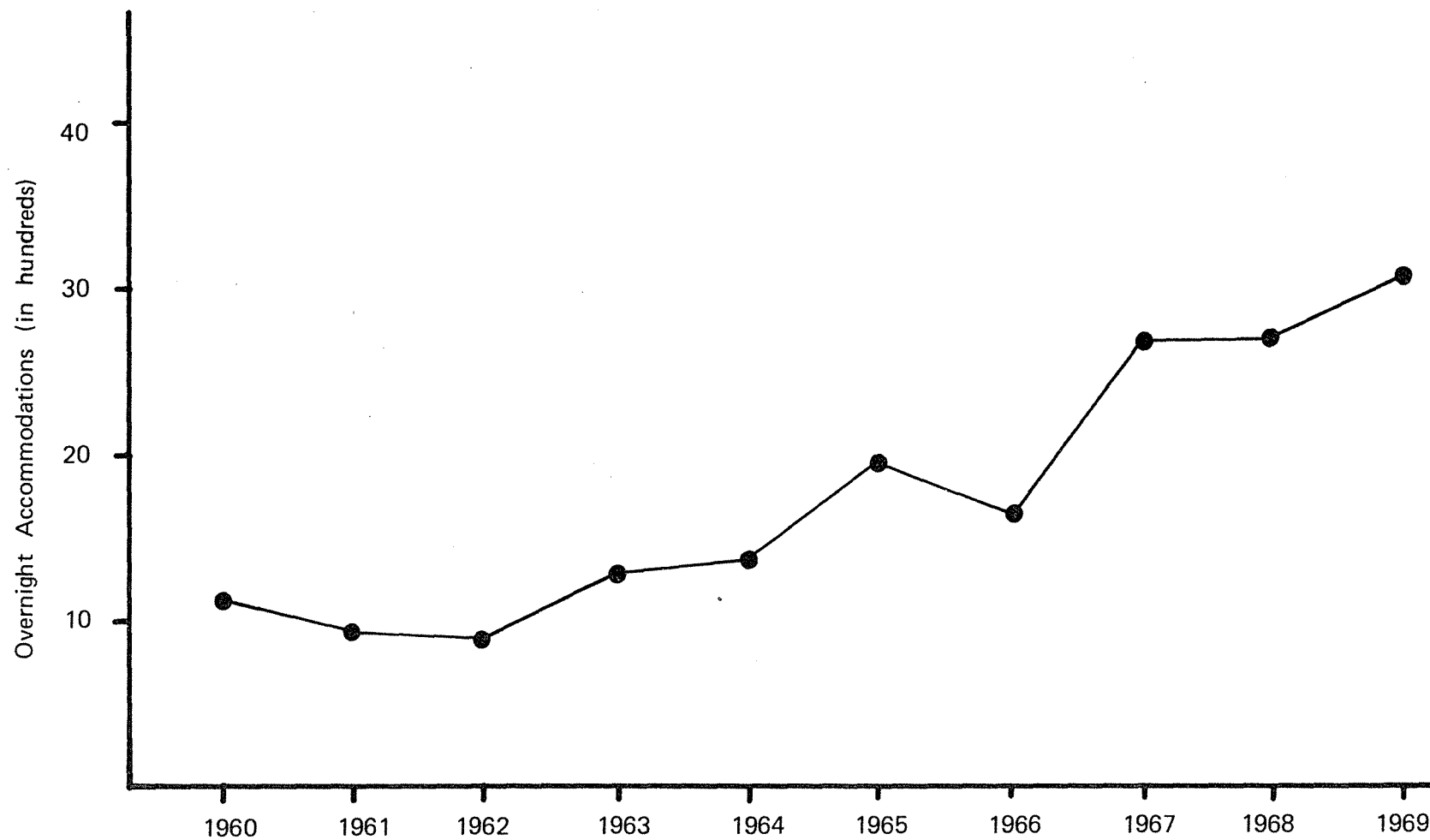


FIGURE 1 KATMAI NATIONAL MONUMENT CONCESSIONAIRE'S OVERNIGHT ACCOMMODATIONS, 1960-1969.

Paddock, Alfred D. 1969. Creel Census of the Bristol Bay Drainage. Alaska Department of Fish and Game.  
Federal Aid In Fish Restoration, Annual Report of Progress, 1968-1969, Project F-9-1, 10:265-273.

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*Date:* April 1, 1970.

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Division of Sport Fish